DRAFT

Keeping Hazards From Becoming Disasters

A Mitigation Workbook for Local Governments

Covering Section 201.6 Requirements

Washington Military Department
Emergency Management Division

June 2002

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In grateful appreciation to North Carolina Division of Emergency Management for allowing us to replicate and modify *Keeping Natural Hazards from Becoming Natural Disasters: A Workbook for Local Governments* for use in Washington State. A special thanks is given to John Vollmer who produced the February 2000 edition of this document.

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INTRODUCTION

Floods, wind storms, winter storms, volcanic eruptions, earthquakes and wildfires: natural hazards are part of the world around us. Their occurrence is inevitable. These events can wreak havoc on the natural environment–-uprooting trees, eroding riverbanks and shorelines, carving new inlets, blackening forests. Yet, the natural environment is amazingly resilient, often recuperating in a matter of days or weeks.

Disasters occur when a hazard crosses paths with the human-made environment, such as buildings, roads, pipelines, and crops. When wind storms tear roofs off houses, it is a disaster. When earthquakes ravage a town, it is a disaster, and when floods invade low-lying homes, it is a disaster. If only wetlands and floodplains that are not developed were flooded, rather than homes and businesses, we would hardly take notice. The natural environment takes care of itself. The human-made environment, in contrast, often needs assistance.

What is Hazard Mitigation?

Hazard mitigation is the practice of reducing risks to people and property from natural hazards. It includes both structural interventions, such as flood control levees, and nonstructural measures, such as avoiding construction in the most flood-prone areas or strapping down top heavy shelving to a wall. Mitigation includes avoiding the development of vulnerable hazardous sections of the community while making existing development in hazard-prone areas safer. For example, a community could identify areas in the community that are susceptible to damage from natural hazards and take steps to make these areas less vulnerable. It also could steer growth to less risky areas. Keeping buildings and people out of harm's way is the essence of hazard mitigation.

Mitigation should not be seen as an impediment to the growth and development of a community. On the contrary, incorporating mitigation into decisions related to your community's growth can result in a safer, more resilient community, and one that is more attractive to new families and business. It should be noted that all mitigation projects affect a local jurisdiction—whether it is a state agency that has mitigated their facility to a home care provider that has mitigated their home—these are structures and homes that first responders can be assured that should be safe—even if only to the point that people can safely leave the structure.

Why Develop a Hazard Mitigation Strategy?

Hazard Identification and Vulnerability Analysis
Developing a mitigation strategy completes the process of planning that began with the state Comprehensive Emergency Management Plan (CEMP). The CEMP requires the development of a comprehensive identification and analysis of the state's hazards, which can be found in the *Washington State Hazard Identification and Vulnerability Analysis*. However, hazard identification and analysis are incomplete processes without developing a plan to mitigate those hazards. Our state is subject to many types of natural hazards: landslides, earthquakes, winter storms, floods, tornadoes, wind storms, and wildfires, all of which can have significant economic and social impact. Some, such as wildfires, are seasonal and strike in predictable locations. Others, such as earthquakes, can occur anytime of the year and almost anywhere in the state. Many technical hazards exist, as well, which when combined with natural hazards can cause

substantial harm to the environment and the citizens of Washington. The *Washington State Hazard Identification and Vulnerability Analysis* will help you determine historically the most likely and most damaging hazards in your area. A hazard identification and vulnerability analysis, specific to your community, buildings and infrastructure is a critical component and can vary in risk from one location to the next.

Requirement for Funding
For all disasters declared on or after November 1, 2003, eligible applicants for grants must have an approved local mitigation plan or strategy in accordance with 44 CFR 201.6 as a condition of receiving a grant from the state's Hazard Mitigation Grant Program. Until November 1, 2003, local mitigation plans may be developed concurrent with the implementation of grants.

Eligible applicants for the HMGP include state agencies, local government (city, town or county), private non-profit organizations with like-government services, special purpose districts, and federally recognized Indian tribal governments. For purposes of this workbook, these applicants will be referred to as "local" or "community."

Eligibility of Future Disaster Assistance
As the result of the Disaster Mitigation Act of 2000, having an approved mitigation plan or strategy is required in order to receive future mitigation assistance under the Stafford Act. This is in addition to being in compliance with all applicable federal, state and local laws. For instance, communities must be in good standing with the National Flood Insurance Program; if required to plan under the Growth Management Act, have an approved plan, as well as Critical Area Ordinances (CAOs) and Development Regulations to protect the critical areas, citizens and infrastructure.

What Are the Benefits of Hazard Mitigation?

Hazard mitigation offers many benefits for your community:

- Saves lives and property–-Your community can save lives and reduce property damage from all hazards through mitigation actions, such as moving families and their homes out of harm's way. Disasters affect housing, businesses, critical infrastructure, and the environment. Residents are displaced, businesses may close, critical infrastructure may be interrupted and the environment's natural functions may be destabilized.

- Reduces vulnerability to future hazards— By having a mitigation strategy in place, your community is prepared to take steps that will permanently reduce the risk of future losses. This opportunity is often lost when we build our communities without regard to hazards or when we rebuild them after a disaster "just as they were before." While it is natural to want to return things to the way they were, it is important to remember that, in many cases, the disaster would not have been as severe if a mitigation plan had been implemented. The economic impact can be less, as well, with less disruption.

- Facilitates post-disaster funding–-By identifying and ranking projects before the next disaster, your community will be in a better position to obtain post-disaster funding because much of the background work necessary for applying for funding assistance will already be done.

- Speeds recovery—By developing a mitigation strategy, your community can identify post-disaster mitigation opportunities in advance of a disaster. By having this strategy thought-out in advance, your community will be ready to respond quickly after a disaster.

- Demonstrates commitment to improving community health and safety—A mitigation strategy demonstrates a community's commitment to safeguarding its citizens and protecting its economic and environmental well being.

- Demonstrates public involvement in decision making—A community that has included its citizens, businesses and industries in developing the mitigation strategy for identifying the priorities towards a safer community, has gained valuable partnerships towards solutions.

- Involves your elected and/or appointed officials, helping them understand the effect of all policy decisions regarding land use and gaining support for emergency management and hazard mitigation.

Purpose of the Workbook

This workbook was prepared to help you develop and implement a successful strategy to reduce your community's vulnerability to hazards. When you finish the workbook, you will have an outline for reducing your community's vulnerability to all hazards. This workbook will help you explore the current state of your community, including identifying hazard areas and existing policies that affect those areas. The workbook will help you define goals for increasing your community's hazard resilience, identify mitigation strategies, and assign responsibility for action.

How to Use This Workbook

To get the most out of this workbook, you should read each section before you fill out the worksheets. Refer to the glossary if there are any unfamiliar terms. You can find help or places to look for help in "Appendix A: Where to Get Help" on page 22.

"My heart's been warmed by watching the best in people come out when disaster strikes. But my heart's been broken by seeing pain I knew could have been prevented."

--James Lee Witt

Table of Contents

Before you begin, your community must decide who will be responsible for developing the mitigation strategy. Where time and resources are short, some communities may decide to assign the responsibility to a manager or clerk. Others may choose to establish a working group comprised of officials from various departments, such as planning, building, community development, transportation, public works, and emergency management. In either case, as a part of your public involvement, your partners should include the business sector, community groups, and the public. Create your list of participants and keep a copy with this book.

This workbook will take you through specific requirements and five steps to establish a mitigation strategy. These steps are designed to be followed sequentially. You do not need to do them in one session, but you should keep to the prescribed order because each step builds on work you did before. You may wish to look over the brief summary of steps 1-5 below so that you know what information you will need before you begin.

Overall Requirements:

- Local or multi-jurisdictional plan with full participation and official adoption of the plan by each Chief Elected Official, submitted to the state Hazard Mitigation Officer by July 2003 with proof of adoption and resubmission every five years after approval. Note: until November 1, 2003, local mitigation plans may be developed concurrent with the implementation of the HMGP grant.
- Public involvement in the planning process throughout the drafting, approval and revising stages.

Step 1: Hazard Identification and Analysis.
This step asks you to broadly identify the hazards that affect your community and to analyze them in terms of frequency, strength, and likely location of occurrence. You will want to have a map of your community, county, and local road maps, a map showing local topography and flood-prone areas (such as a flood insurance rate map [FIRM]), and any available sources of data regarding where and when hazards have hit your community. For state agencies and other eligible jurisdictions without land use authority, contact your local city or county in which your project(s) is located to begin this process. While the focus is on natural hazards, technological or man-made hazards may be included.

Step 2: Vulnerability Assessment.
In this step, you will determine the potential for damage in each hazard-prone area of your community. This step will help you determine which areas would be most affected by a hazard event. You will want to have the tools to establish an inventory of each area, such as a population count or home and business assessed values. This can be done in different ways. For example, your community might choose to do a qualitative assessment using approximate values or more detailed inventory with actual values from a tax assessment map.

When you finish steps 1 and 2, you will have a list of problems that need to be addressed. In step 3, you will examine what your community is already doing to address those problems.

Step 3: Community Capacity.
This step asks you to assess your community's current mitigation activities. While few communities in Washington have a dedicated mitigation strategy, most have policies that affect construction in hazard-prone areas. The workbook will suggest policies and categories of policies to look for. You also may need to identify common regulations, such as zoning, which may unintentionally counter your mitigation efforts. You will need to have the applicable policy documents at hand, including your community's comprehensive plan or other applicable documents.

By the end of step 3, you will have a sense of the existing conditions in your community: where the potential problems are, and what already is in place to provide solutions. In the next two steps, you will create solutions to address the remaining problems and plan for action.

Step 4: Community Goals.
In this step, you will determine how mitigation fits into your community's vision of its future. Mitigation may not be explicitly mentioned in your vision statement, goals, and objectives, but you should identify where it could overlap with other community goals. You will need a copy of your community's vision statement or general plan. If your community does not have these documents, you should use your best judgment or survey community leaders to discern what are the community's goals. The public involved in your planning may identify goals, as well.

Step 5: Mitigation Strategy.
Now that you have a list of issues to address, you can establish a plan to address them. Some issues may be addressed effectively by implementing existing policies or making modifications to those policies. Others will require new initiatives. You may choose to rank the policies in a way that helps you plan your implementation. You also will need to assign responsibility for each initiative. You may wish to set an implementation and review schedule after consulting with the responsible department or officer.

"The time has come to face the fact that this nation can no longer afford the high costs of natural disasters. We can no longer afford the economic costs to the American taxpayer, nor can we afford the social costs to our communities and individuals."

James Lee Witt, Director (former), FEMA
Testimony Before U.S. Congress
October 27, 1993

OVERALL REQUIREMENTS

In order to be eligible for future hazard mitigation funding, a local jurisdiction must have a hazard mitigation plan that meets the requirements of 44CFR201.6. A local jurisdiction is a county, city, town, federally recognized tribe, nonprofit organization with like-government services, special purpose districts and state agencies. Additionally, all federal, state and local laws must be followed.

A multi-jurisdictional plan may be accepted, as long as each jurisdiction has participated in the process and has officially adopted the plan and provides documentation of the adoption and participation. Multi-jurisdictional plans risk assessment section must assess each jurisdiction's risks where these vary from the risks facing the entire planning area. There must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Planning Process: An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural hazards, the planning process shall include:

1. an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

2. an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process;

3. review and incorporation, if appropriate, of existing plans, studies, reports, and technical information;

4. documentation of the planning process used to develop the plan, how it was prepared, who was involved in the process, and how the public was involved; and

5. incorporation of a five-year maintenance cycle with public involvement for future revising of the plan. Ensure that your hazard mitigation plan includes a maintenance section to include the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle. The process for incorporating the hazard mitigation plan into other planning and policy mechanisms, such as a comprehensive growth management or capital improvement plan or community strategy.

Submission for Approval: The process for approval will be as follows:

1. Submit one hard copy and one CD (or two hard copies) of the adopted plan with documentation of adoption, maps and other attachments to the State Hazard Mitigation Officer.
2. State Hazard Mitigation Office staff will briefly review for completeness. If incomplete, the plan will be returned to the jurisdiction. If complete, the plan will be forwarded to FEMA Region X Mitigation Office.

3. The FEMA Region X Mitigation Office will send a letter of receipt to the jurisdiction indicating that the 45-day review period has begun.
4. FEMA Mitigation staff will review, based on the requirements of Section 201.6, using a scale of met or not met and Unsatisfactory, Needs Improvement, Satisfactory and Outstanding. All elements must meet Satisfactory in order to be approved.

5. Once the plan is reviewed, it will be determined as approved or not approved. If not approved, FEMA Mitigation staff will send a letter with comments of areas to be addressed to the jurisdiction with a copy to the State Hazard Mitigation Office. The plan is not returned.

6. If the plan is not approved due to minor omissions, the documentation can be submitted for review, through the state to FEMA. If the plan requires significant changes, the public involvement process and readoption must be undertaken by the jurisdiction.

7. In addition to the worksheets, which are here to help you gather information, there should be narrative as to where information can be found, answering the process and documentation questions. For sample of narrative, see the *Washington State Local Mitigation Plan Criteria* document, which provides suggested narrative for answering the plan requirements. For documentation of where other information can be found, place as an addendum that includes:
    a. The cover of the plan or other document which indicates that it was adopted (and approval of funding entity).
    b. Specific pages or sections copied from the plan or other document that addresses the requirement(s) of Section 201.6.

8. Plans should have a section on how other jurisdictions may be incorporated after adoption and/or FEMA approval of the main plan. For instance, a county with several jurisdictions goes through the public involvement process and the individual questions and documentation.
    a. The plan identifies which jurisdictions are included and documents the adoption.
    b. Two additional jurisdictions within a planning area ask to join the county's main plan.
        i. The new jurisdictions would be required to answer the questions of Section 201.6 as to how their jurisdictions are affected and submit proof of public involvement in the drafting and revising, formally adopt the county plan and their elements.
        ii. Submit to the county, as holder of the main plan, and request for inclusion as an addendum for approval by the county board.
        iii. Proof of county adoption of the new addendums submitted with the addendums to the state for review and submittal to FEMA for review and approval or disapproval.

9. Jurisdictions will be notified of their five-year review cycle in the notice of receipt of their plan. It is anticipated that the review cycle will be based on a July 1, 2003 first submission with a renewal submission on July 1, 2008.

STEP 1: HAZARD IDENTIFICATION AND ANALYSIS

The first step is to decide on which hazards to focus your attention and resources. To plan for hazards and reduce losses, a local government needs to know the:

1. **type** of hazards that threaten the community,
2. **likelihood of occurrence** of the hazards,
3. **location** of the community that is most vulnerable,
4. **impact** of the hazard, and
5. **strength** of the hazard.

Worksheet 1 will help you organize the information needed for items 1-5. In completing the worksheet, you can use either a qualitative scale (such as low – medium – high, or mild – moderate – severe), or a numeric scale (such as 1-5). For example, a landslide or earthquake that destroys numerous homes could be severe, while flooding that temporarily makes a road impassible could be moderate or mild.

- **Type**–-Washington State experiences many different types of hazards. Some are more likely than others to occur in your community. Different hazards call for different mitigation measures. The preferred approach is to consider all the hazards that threaten your community and focus on those that pose the greatest risk. Cross out any hazard that does not apply. Add hazards not listed or emerging hazards. You can include technological hazards, however, the focus is primarily natural hazards.

- **Likelihood of Occurrence**–-You should estimate the likelihood of each type of hazard occurring in your area. Base this estimate on local historical evidence and by reference to the *Washington State Hazard Identification and Vulnerability Analysis* or a local *Hazard Identification and Vulnerability Analysis*. Also, look at declared and nondeclared disasters that had local impacts. Is there a pattern or what may have changed (new development causing groundwater flooding in previous area not affected?). The local Hazard Identification and Vulnerability Analysis is to be attached or part of the narrative of the plan.

- **Location**–-Certain areas, such as liquefaction zones, floodplains, and steep slopes, are more prone to hazards than others. Many of these areas are readily identifiable on maps. Identify the areas that are most vulnerable to each hazard and mark whether these cover a small, medium, or large proportion of your community.

- **Impact**–-Each community should determine the likely impact of each hazard. This is a combination of the likely strength of the event, the size of the area(s) affected, and the density of the human activity in that area. For the moment, these impacts should be evaluated only in terms of strength and size of area, and should be ranked high, medium, or low. You will evaluate the potential impact of hazards on human activity in your community on the next worksheet. The strength of hazards varies across the state.

- **Hazard Index**–-Some hazards have extraordinary impacts, but occur infrequently (for example, severe earthquakes). Other hazards occur annually or several times a decade, but cause less damage (for example wind storms and floods). You may use this last column to identify which type of risk each hazard poses for your community. For example, you should rank high likelihood, high impact hazards as your primary objective. What impact does loss of power have on industry, homes, critical care facilities, and schools?

    - Additionally, it is required for jurisdictions to have information on previous occurrences of hazard events. Include the date(s), disaster number if presidentially declared, what type of hazard(s), what was affected and how (i.e., ice encrusted tree branches along the overhead power lines broke, disrupting power to the eastern portion of the county, affecting 100 homes, a water treatment plant, and a critical facility for over seven days.) If there are costs for repairs, insurance or other data known, it should be included in this history of damages.

See WORKSHEET #1: **HAZARD IDENTIFICATION AND ANALYSIS IN APPENDIX D**

STEP 2: VULNERABILITY ASSESSMENT

In developing a strategy to reduce the impact of hazards, your community will need to determine its present and future vulnerability to such hazards. You can calculate vulnerability by combining the probability of various hazards in each area (as determined from Worksheet #1), with the amount and value of development in that area (to be determined in this step). A community should inventory and estimate the cost of damage to critical facilities (e.g., a hospital or waste treatment facility) and highly vulnerable residential, commercial, industrial and public facilities. You can use Worksheet #2 to help assess your community's present and future vulnerability. Worksheet #2a could be copied to come up with a synthesized vulnerability summary for your community.

Preparing an inventory of people and property at risk is an essential part of assessing your vulnerability to hazards. In addition, the "Community Rating System" gives points for an assessment of the impact of flooding on a community if it includes an inventory of the number and types of buildings subject to the hazards identified in the hazard assessment. Therefore, preparing this inventory also can help your community get subsidized flood insurance and other assistance in the future.

Assessing your community's vulnerability involves:

1. Identifying (by name or neighborhood) areas of greatest risk,
2. Conducting an inventory of those areas, and
3. Putting these areas on a map.

❖ Identifying areas of greatest risk.

Refer to Worksheet #1 to identify those areas in the community that are subject to the greatest risk of damage from a hazard. Copy and fill out a Worksheet #2 for each hazard-prone area in your community.

❖ Conduct an inventory of the "current" population in vulnerable areas.

The first three columns of Worksheet #2 ask you to estimate the current number of people and buildings, and the value of those buildings, located in the hazard-prone area.

Estimate your current population using either current local figures or the current version of Population Trends produced by the Washington State Office of Financial Management. See: http://www.ofm.wa.gov/demographics.htm.

Establish building count and approximate values in one of two ways. Choose between doing an assessment using approximate values or a more detailed inventory with actual numbers and values from a tax assessment map—that can be determined as providing a factual basis for future mitigation activities. At a minimum, inventory a prioritized list of structures and infrastructures that your jurisdiction cannot be without for the first minute, hour, day, and week.

❖ Conduct an inventory of "projected population" in vulnerable areas.

The next three columns of Worksheet #2 ask you to estimate the projected population and number of buildings, and the value of those buildings (new or major renovation), located in each hazard-prone area. Note that for each new building or structure, there is infrastructure, and critical facilities that may be in the hazard areas and should be part of the inventory to address how the hazard can impact the community. Additionally, estimate the potential dollar losses to vulnerable structures identified in the hazard areas and a description of the methodology used to prepare the estimate.

Estimate how many people will be in the vulnerable areas in the future if current land use policies remain unchanged. Note that for these estimates you should use the maximum number of people who may be affected. For example, if your community has seasonal influxes of people, you should use population estimates that reflect the largest number of people in your community. This will ensure that your community is adequately protected year-round.

Method for estimating population: If your community has not developed a method of projecting growth, one way is to rely on past growth trends. You can get additional information from the OFM website. These growth rates were calculated using the growth observed between the 1980 U.S. Census and the 1998 Office of Financial Management Growth Estimates.

- **Conduct an inventory of "projected" number of buildings in vulnerable area.**

To project a future number of buildings, simply calculate a ratio of people to buildings. To do this, divide the current population estimate from column 1 by the current number of buildings from column 2.You should repeat this method to figure out the future demand for commercial and industrial buildings, public buildings, and critical facilities.

Use the residential population figures for each of these steps. This will give you a way to estimate the number of new buildings you will need based on population. For example, if your ratio results in 100 people per commercial building, you can estimate that 1,000 new residents would require the development of 10 new commercial buildings in the future.

To complete the approximate value column you can multiply the estimated future number of buildings times the average present value for that type of building. Note: this will be an underestimate of future value because it doesn't account for appreciation and inflation, but it will give you a rough estimate.

In addition, your local comprehensive plan should be a good source of information on future trends and conditions, such as whether future growth is likely to occur in areas highly vulnerable to hazards given existing policies. Provide a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

NOTE: These estimates are designed to give you ballpark figures to help you consider development in your community for the purpose of this exercise **ONLY**. These are extremely rough estimates that should **NOT** be used for any other purpose.

❖ **Prepare a map showing the areas identified above.**

Prepare a map that shows the areas of highest risk and that marks the critical facilities, major employers, repetitively damaged structures, and infrastructure in those areas. Areas prone to flooding that are not included on the Flood Insurance Rate Maps should be marked on the map. You also should identify areas subject to hazards other than floods, such as steeply sloped areas and liquefaction zones.

❖ **Summarize your findings on Worksheet 2a: Total Vulnerability Summary.**

Total your copies of Worksheet 2 on Worksheet 2a: Total Vulnerability Summary. This will help you assess the vulnerability of your entire community at the present and for the future.

See WORKSHEET #2: AREA VULNERABILITY ASSESSMENT and
See WORKSHEET #2a: TOTAL VULNERABILITY SUMMARY in Appendix D.

STEP 3: COMMUNITY CAPABILITY ASSESSMENT

The capability assessment will help you analyze your community's current capacity to address the threats posed by hazards. It identifies and evaluates existing policies and programs that either increase or decrease your jurisdiction's vulnerability to natural hazards. The capability assessment is more than a mere inventory of existing mitigation measures and organizations with hazard mitigation responsibility. It also should help you understand why certain policies may or may not be effective at mitigating hazards.

- ✓ **Analyze policies, programs, and ordinances that may affect vulnerability.** Prepare a list of the community's existing and proposed mitigation initiatives and the policies, ordinances and regulations that guide these efforts.

- ✓ **Record on Worksheet 3 existing policies and programs that may increase or decrease your community's vulnerability to hazards. List a document page reference for each, if applicable.** You should identify current policies that weaken hazard mitigation efforts and those that enhance them. For example, by extending public facilities into hazard-prone areas, a community may unintentionally aid development in these areas. Such policies weaken mitigation efforts. You also should identify areas where no policy exists and therefore new policies are needed to reduce current and future risks of hazards.

The following are some examples of policies you should look for:

- Policies that restrict or encourage development in hazard-prone areas.

- Policies that allow improvements or activities in hazard-prone areas.

- Economic incentives (such as tax relief) that encourage or discourage development in high hazard areas.

- Policies that encourage the removal or relocation of buildings in the floodplain.

- Policies that protect critical facilities, such as police stations and emergency shelters (e.g., elevate them or prohibit their construction in hazard-prone areas).

- Policies that encourage the acquisition of properties, especially those in hazard-prone areas.

- Policies or projects that earn community credit through the Community Rating System.

- Policies that limit development in environmentally sensitive areas such as steep slopes.

- Policies that protect mitigating features of the environment, such as wetlands or dunes.

- ✓ **Evaluate the effectiveness of each policy for mitigation purposes**. Rank these as high, medium, or low. Explain the rationale for this evaluation in column 4 (explain why the policy helps or hurts your mitigation efforts). For example, your community's zoning ordinance may allow development in the floodplain. Such a policy would have low mitigation effectiveness. However, a zoning ordinance that prevented development in the floodplain would rank as a highly effective mitigation policy.

See WORKSHEET #3: COMMUNITY CAPABILITY ASSESSMENT in Appendix D.

STEP 4: COMMUNITY GOALS

What are the hazard mitigation goals of the community to reduce or avoid long-term vulnerabilities to the identified hazards? How do these goals fit with its other goals? How does the community envision its response to natural hazards in the future? An answer to these questions may already exist in the form of goals and policies in the community's comprehensive plan, capital improvements plan, emergency management plan, building and subdivision ordinances, and other documents. By reviewing these plans and policies and listing the relevant goals, you may find statements that are helpful for developing your mitigation priorities.

List any community goals that are relevant to mitigation.

Many communities may not have addressed hazards when they established their goals and objectives. As a result, hazard risks may have been overlooked, and some goals and objectives may even hinder mitigation. Thus, it may be necessary to create new goals or to reconcile old ones with the community's interest in mitigation. In most cases, however, existing community goals will support mitigation initiatives.

Completing Worksheet 4 will help you see how a mitigation strategy can address other community goals, such as preserving open space, providing public access to the coast, managing growth, prioritizing capital improvements and protecting natural resources.

The following are some examples of goals you should look for:

- ✓ Provide more community open space.
- ✓ Ensure that emergency services are adequate to protect public health and safety.
- ✓ Preserve environmentally-sensitive areas.
- ✓ Maintain a stable and growing business community.
- ✓ Preserve community historic resources.
- ✓ Provide infrastructure that accommodates future growth.

Consider this--approximately 25 percent of businesses never reopen after a disaster. Even if a business is not physically damaged during a disaster, it cannot operate if employees cannot get to work, water and electricity are unavailable, or customers fear safety hazards.

BECOME
A DISASTER RESISTANT
COMMUNITY

See WORKSHEET #4: COMMUNITY GOALS in Appendix D.

STEP 5: MITIGATION STRATEGY

The main goal of this workbook is to help communities in Washington develop their own strategies to reduce their vulnerability to hazards. In each community, that strategy will consist of specific mitigation initiatives or projects. This section will guide you in creating a list of mitigation initiatives or projects so your community can match programs to vulnerable areas.

In Worksheet 3, you listed existing policies and evaluated their effectiveness for mitigating natural hazards. Worksheet 4 asked you to look at your community's existing goals and objectives, as reflected in current plans, and to determine whether these goals address your mitigation needs. Worksheet 5 is your chance to add new mitigation goals and policies to fill the gap between existing policy (Worksheet 3) and your (new) mitigation goals (Worksheet 4). That is, Worksheet 5 will help identify gaps where new policies or projects are needed to reduce the community's vulnerability to natural hazards. Example initiatives are described in Tools and Techniques for Mitigating the Effects of Natural Hazards. (See "Publications" for information on obtaining a copy.)

- ✓ Copy hazard areas identified on Worksheet 2 into Worksheet 5, column 1: Hazard Area Location.

- ✓ List hazard types affecting each location in column 2: Type of Hazard(s).

- ✓ Identify new initiatives or changes to existing policies to improve resistance to the identified hazard(s) in each affected location. List these in column 3: New Initiatives or Recommended Policy Changes.

Consider the following when evaluating which policies to add or change. Your community's:

  - capability to implement the required new policy,

  - vulnerability to hazards, and

  - goals and needs.

- ✓ Some of these policies and initiatives will help you meet the goals you identified on Worksheet 4. List the goals you are helping to achieve in column 4: Goals Addressed.

- ✓ Assign responsibility for each initiative and set a date for its completion. Note these in column 5 and 6: Responsible Party and Date Due.

- ✓ After completing Worksheet 5 for each of the hazard areas locations identified in Worksheet 2a, complete Worksheet 5a.

  - Worksheet 5a re-orders the information from Worksheet 5 and allows you to see what policy changes are needed to mitigate hazards in the locations identified. Some policies may affect more than one hazard mitigation area.

- You may need to photocopy these sheets to provide enough space. This list of proposed projects should guide funding and policy decisions both before and after a disaster.

See WORKSHEET #5: MITIGATION STRATEGY and WORKSHEET #5a: SUMMARIZED STEPS FOR MITIGATION STRATEGY in Appendix D.

Monitoring and Evaluating
Monitoring and evaluating the process for progress and completion of selected projects and updating the plan. Ensure there is a clear section on how the projects and updating or maintenance of the plan will occur. What priorities will be set and how will mitigation become part of daily policy making.

Ensure that there is a clear blueprint for reducing the potential losses identified in the risk assessment, based on the existing authorities, policies, programs and resources, and your jurisdiction's ability to expand on and improve these tools. There shall be:

- A description of mitigation goals to reduce and avoid long-term vulnerabilities to the identified hazards.

- A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard with particular emphasis on new and existing buildings and infrastructure.

- An action plan describing how the actions will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

- Multi-jurisdictional plans must have identifiable action items specific to the jurisdiction requesting approval or credit within the plan.

PUTTING IT ALL TOGETHER

This workbook can help you develop a strategy to reduce your community's present and future vulnerability to hazards. The strategy should reflect your community's unique needs, vulnerability, and capabilities and should include the right mix of new and revised programs, ordinances, policies, and other tools that work for your community. Completing the workbook, however, is just the beginning. For the strategy to be effective, the governing body of your community must adopt it and the appropriate agency or office must implement it.

Development of the mitigation strategy should not be an isolated effort, independent of other government functions. On the contrary, mitigation efforts should be integrated with other community planning and development activities, such as preparing land use and subdivision plans and ordinances; preparing capital improvement plans with mitigation activities; enforcing construction and building regulations; and making choices about future spending for infrastructure.

By integrating mitigation concepts into governmental activities today at a relatively low cost, the community can reduce its vulnerability to hazards and avoid more costly losses from future disasters. The time, energy, and resources invested in mitigation could significantly reduce the demand for future dollars by reducing the amount needed for emergency recovery, repair, and reconstruction following a disaster.

Mitigation is an on-going process. It is not just something that occurs after a disaster strikes. As conditions in your community change, you may find it necessary to revisit the strategy you developed here. Repeating the process of working through this book will not only allow you to update your strategy, it will allow you to assess how well your strategy is working. This will be especially true immediately following a disaster. During this time, people are more receptive to making changes to mitigate future disasters. You should re-examine your mitigation strategy each year and begin the review for the five-year update on a regular interval at least six months prior to the state and federal set review cycle.

"Mitigation is about lowering the risk and reducing the effects of disasters, and this ambitious venture has the potential to reap great rewards. To successfully mitigate against disaster will require the combined talents and concerted efforts of all levels of governments, academia, professional and voluntary organizations, the corporate sector and all Americans."

William J. Clinton
President of the United States
December 6, 1995

APPENDIX A: WHERE TO GET HELP

ORGANIZATIONS

Washington State Military Department
Emergency Management Division
MS: TA-20, Building 20
Camp Murray, WA 98430-5122
Tel: (800) 562-6108
Fax: (253) 512-7200
Web: http://www.wa.gov/wsem Also see: http://www.wa.gov/wsem/site-general/wa-map/wa-state.htm for county and city emergency management contacts

Washington State Office of Financial Management (OFM)
PO Box 43113
Olympia 98504-3113
Tel: (360) 902-0555
Web: http://www.ofm.wa.gov/

Washington State Office of Community Development
906 Columbia St. S.W.
Olympia, WA 98504-8300
PO Box 48350
Olympia, WA 98504-8350
Tel: (360) 725-2800
Web: http://www.ocd.wa.gov/

Office of Archaeology and Historic Preservation
1063 South Capitol Way, Suite 106
Olympia, Washington 98501 or
PO Box 48343
Olympia, WA 98504-8343
Tel: (360) 586-3065
Fax: (360) 586-3067
Web: http://www.oahp.wa.gov/

Washington State Department of Natural Resources
1111 Washington Street SE
PO Box 47001
Olympia, WA 98504-7001
Tel: (360) 902-1004
Web: http://www.wa.gov/dnr

Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504-7600
Tel: (360) 407-6000
Web: http://ecy.wa.gov

Office of the Code Reviser
Legislative Building
P.O. Box 40551
Olympia, WA 98504-0551
Tel: (360) 786-6777
Web: http://slc.leg.wa.gov/

Municipal Research Center
Web: http://www.mrsc.org/

Association of Washington Cities
1076 Franklin Street SE
Olympia, WA 98501
Tel: (360) 753-4137
Fax: (360) 753-0419
Web: http://www.awcnet.org

National Emergency Management Association
c/o Council of State Governments
P.O. Box 11910
Lexington, KY 40578
Tel: (859) 244-8000
Web: http://www.nemaweb.org/index.cfm

National Weather Service
NOAA Public & Constituent Affairs
Room 6013
14th Street & Constitution Avenue, NW
Washington, DC 20230
Tel: (202) 482-6090
Fax: (202) 482-3154
Web: http://www.noaa.gov/
or http://www.nws.noaa.gov/index.html

University of Washington
Department of Earth and Space Sciences
63 Johnson Hall
Box 351310
Seattle, WA 98195-1310
Tel: (206) 543-1190
Web: http://www.geophys.washington.edu/

Washington State Association of Counties
206 Tenth Avenue SE
Olympia, WA, 98501
Tel: (360) 753-1886
Fax: (360) 753-2842
Web:
http://www.wacounties.org/wsac/index.htm

International Association of Emergency Managers (IAEM)
111 Park Place
Falls Church, VA 22046-4513
Tel: (703) 538-1795
Fax: (703) 241-5603
Web: http://www.iaem.com/

Washington Association of Building Officials
PO Box 7310
Olympia WA 98507-7310
Tel: (360) 586-6725/Toll-Free: (888) 664-9515
Fax: (360) 586-5538
Web: http://www.wabo.org

Federal Emergency Management Agency
500 C Street SW
Washington, DC 20472
Web: http://www.fema.gov/mit/

FEMA Region X
Federal Regional Center
130 228th Street SW
Bothell, WA 98021-9796
Tel: (425) 487-4600
Web: http://www.fema.gov/reg-x/regx.htm

FEMA National Emergency Training Center
16825 South Seton Avenue
Emmitsburg, MD 21727
Tel: (301) 447-1000
Web: http://www.fema.gov/emi/

Office of Management and Budget (OMB)
New Executive Office Building
725 17th Street NW, Room 8002
Washington, DC 20503
Tel: (202) 395-3080
Web: http://www.whitehouse.gov/omb/

Cascades Volcano Observatory (USGS)
David A. Johnston Cascades Volcano Observatory
5400 MacArthur Blvd
Vancouver, WA 985661
Web: http://vulcan.wr.usgs.gov/home.html

U.S. Small Business Administration (SBA)
Disaster Assistance Division
Office of Disaster Assistance
409 Third Street SW
Washington, DC 20416
Tel: (202) 205-6734

US Army Corps of Engineers
Seattle District- Public Affairs
PO Box 3755
Seattle, WA 98124-3755
Tel: (206) 764-3742
Web: http://www.usace.army.mil national
http://www.nws.usace.army.mil/index.cfm
Seattle

U.S. Geological Survey (USGS)
807 National Center
12201 Sunrise Valley Drive
Reston, VA 20192
Tel: (703) 648-4000
Web: http://www.usgs.gov

US Census Bureau
Statistical Information Staff
Population Division
4700 Silver Hill Road
Washington, DC 20233
Tel: 301.763.4636
FAX 301.457.4714
Web: http://www.census.gov

US Small Business Administration (SBA)
Disaster Assistance Division--Office of Disaster Assistance
409 Third Street SW
Washington, DC 20416
Tel: 202.205.6734
Web:
http://www.sbaonline.sba.gov/DISASTER

Other Links

American Planning Association
http://www.planning.org/ provides planning information.

Association of State Floodplain Managers
http://www.floods.org/ national organization

Center of Excellence for Sustainable Development, U.S. Department of Energy
http://ww.sustainable.doe.gov web site includes extensive sections on land use and disaster planning that offer information on how long-term community sustainability can be incorporated into disaster preparedness, mitigation and recovery.

Council of State Governments
http://www.statesnews.org/index.asp provides assistance on legislation passed in other states, including mitigation.

Daily Digest of the Senate and House of Representatives (Congress)
www.access.gpo.gov/su_docs/aces/digest001.shtml

Federal Emergency Management Agency Planning Website
http://www.fema.gov/mit/planning.htm

Flood Mitigation Assistance
http://www.fema.gov/mit/fmasst.htm

HAZUS (FEMA)
http://www.fema.gov/hazus
FEMA, under a cooperative agreement with the National Institute of Building Sciences, has developed a standardized, nationally applicable earthquake loss estimation methodology. This methodology is implemented through PC-based Geographic Information System (GIS) software called HAZUS.

Mitigation Technical Assistance Programs (FEMA)
http://www.fema.gov/mit/fldmitast.htm

National Association of County Engineers
http://www.naco.org/affils/nace/index.htm
The NACE Legislative/Regulatory Alert provides information on selected legislation of interest to NACE members.

National Association of Flood and Stormwater Management Agencies (NAFSMA)
http://www.nafsma.org/
The Floodplain Management Committee tracks and influences federal legislation and regulations that affect NAFSMA member's floodplain management programs.

National Flood Insurance Program (NFIP)
http://www.fema.gov/nfip
The NFIP makes Federally-backed flood insurance available in communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

National League of Cities
http://www.nlc.org/
Legislative activities of the NLC involve a continuous effort to inform NLC members of pending actions in Washington, D.C. that have implications for cities and towns.

Natural Hazards Observer
http://www.colorado.edu/hazards/o/o.html
the bimonthly newsletter of the Natural Hazards Center covers current disaster issues; political and policy developments; new international, national, and local disaster management, mitigation, and education programs; hazards research; and new information sources.

Pre-Disaster Mitigation Program (PDM)
http://www.fema.gov/mit/pdm.htm
Learn more about FEMA's *Pre-Disaster Mitigation Program*, launched in 2002 to build disaster resistant communities across the United States.

Seismic Legislation on the Web
http://www.eeri.org/Features/legislation/SLW.html#Midwestern provides links to various pieces of state and federal legislation addressing seismic safety.

United States Environmental Protection Agency
http://www.epa.gov/region4/water/wetlands/legal/eo.html includes legislation and policy related to wetlands.

WA Institute for Hazards Mitigation Planning and Research
http://depts.washington.edu/mitigate/

POSSIBLE SOURCES OF FUNDING

Hazard Mitigation Grant Program (HMGP)—The Federal Disaster Assistance Act (Stafford Act) provides funds authorized by the federal government following a presidential disaster declaration and made available by FEMA for a cost-share program to states. The HMGP provides 75% of the funds while the state provides for a nonfederal share of 25% (usually evenly divided between the state and local jurisdiction) of the funds for mitigation measures through the post-disaster planning process. The state Emergency Management Division, through the State Hazard Mitigation Officer, administers the program in Washington State. The state share may be met with cash or in-kind services. The program may be available only for areas affected by a presidential disaster declaration or statewide.

Flood Mitigation Assistance (FMA) Program—This program provides grants for cost effective measures to reduce or eliminate the long-term risk of flood damage to the built environment and real property. The program's main goal is to reduce repetitive losses to the National Flood Insurance Program (NFIP). FMA is available to eligible communities every year, not just after a presidential disaster declaration. FEMA, through the state Emergency Management Division, administers the program.

Public Assistance Program (PA)—The Public Assistance Program provides federal aid to communities to help save lives and property in the immediate aftermath of a disaster and to help rebuild damaged facilities. Grants cover eligible costs associated with the repair, replacement, and restoration of facilities owned by state or local governments and nonprofit organizations.

Small Business Administration (SBA) Disaster Assistance Programs—These programs provide loans to businesses and individuals affected by presidential and SBA disaster declarations. The program provides direct loans to businesses to repair or replace uninsured disaster damage to property owned by the business, including real estate, machinery, and equipment, inventory and supplies. Businesses of any size are eligible. Nonprofit organizations are also eligible. Assistance to individuals comes in the form of low-interest loans for repair or replacing damaged reel and personal property. The SBA administers the Disaster Assistance Programs.

SBA Pre-disaster Mitigation Loans—The new loan program began in January 2000 and is funded for five years. This program makes funds for mitigation available to businesses in Project Impact communities.

Community Development Block Grant (CDBG)—The CDBG program provides grants to entitlement communities (metropolitan cities and urban counties) for post-disaster hazard mitigation and recovery following a presidential declaration of a major disaster or emergency. Funds can be used for activities such as acquisition, rehabilitation, or reconstruction of damaged properties and facilities and redevelopment of disaster-affected areas. Funds also may be used for emergency response activities, such as debris clearance and demolition and extraordinary increases in the level of necessary public services. U.S. Housing and Urban Development provides funds for CDBG and the Washington State Department of Community, Trade, and Economic Development administers the program.

Flood Control Assistance Account Program (FCAAP)—(RCW 86.26.050, WAC 173-145-010) Provides that county and other municipal corporations responsible for flood control maintenance may apply to the Department of Ecology for financial assistance for the preparation of comprehensive flood control management plans and for flood control maintenance projects as described in RCW 86.26.105. The department determines priorities, allocates available funds from the FCAAP among those counties applying for assistance, and adopts regulations establishing the criteria by which such allocations shall be made. Criteria are based upon proposals that are likely to bring about public benefits commensurate with the amount of state funds allocated.

Also see:

- Association of Washington City website at http://www.awcnet.org/grants.htm.
- Emergency School Repair and Renovation website at: http://www.k12.wa.us/facilities/esrr/.
- how to write or obtain grants, website: http://www.mrsc.org/finance/grants/grants.htm
- some Washington State grants website: http://www.mrsc.org/finance/grants/wagrant.htm
- database for grants and loans in the state through the Infrastructure Assistance Coordinating Center Council website: http://www.infrafunding.wa.gov/ is a
- a "how to manual on presenting the critical need for fire and EMS services. Might help some of the volunteer organizations website: http://www.usfa.fema.gov/text/usfapubs/fa-141.txt

PUBLICATIONS

Washington State Emergency Management
• Hazard Identification and Vulnerability Analysis
• Comprehensive Emergency Management Planning Guide
• Comprehensive Emergency Management Plan
• Hazard Mitigation Strategy
• Disaster Recovery Plan

Washington State Department of Community, Trade and Economic Development: Growth Management Division
Model Code Recommendations for Designating and Protecting Critical Areas, 1st Edition, 2nd Draft, May 2002. http://www.ocd.wa.gov/info/lgd/growth/bas/model_cao_pic_051002.pdf

Federal Emergency Management Agency (FEMA)
FEMA publications are available from the FEMA Distribution Facility: (800) 480-2520

- Community Rating System (see: Flood Mitigation Planning - The CRS Approach: http://www.fema.gov/nfip/crs.htm
- Disaster Assistance: A Guide to Recovery Programs, FEMA 229(4)
- Flood Mitigation Assistance Program http://www.fema.gov/mit/planfma.htm
- Making Mitigation Work: Recasting Natural Hazards Planning and Implementation, February 1997
- Mitigation: Cornerstone of Building Safer Communities, 1995, Center for Urban and Regional Studies (CURS)
- National Environmental Policy Act (PL 91-190), NEPA, 1970 (ALSO see: The President's Council on Environmental Quality (CEQ), 44 CFR Part 10, Environmental Considerations; Council on Environmental Quality Regulations at 40 CFR Part 1500-1508)
- National Flood Insurance Program http://www.fema.gov/nfip
- Planning for Post-disaster Recovery and Reconstruction, American Planning Association and FEMA, 1998, No #
- Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability, FEMA 364
- A Planning Initiative: Documenting "Best Practices" in Local Communities, results to be published on FEMA website
- Property Acquisition Handbook for Local Communities, FEMA 317
- http://www.fema.gov/mit/handbook/
- Rebuilding for a More Sustainable Future: An Operational Framework, FEMA 365
- Getting Started, FEMA Publication 386-1, To be published in summer 2002

- State and Local Mitigation Planning How-To-Guide: Understanding Your Risks-Identifying Hazards and Estimating Losses, August 2001, FEMA Publication 386-2
- Developing the Mitigation Plan, FEMA 386-3, To be published in summer 2002
- Bringing the Plan to Life, FEMA 386-4, To be published in fall 2002
- Using Benefit/Cost Analysis in Mitigation Planning, FEMA 386-5, To be published in fall 2002
- FEMA 386-6, To be published in fall 2002
- Integrating Man-Caused Disasters into Mitigation Planning, FEMA 386-7, To be published in summer 2002
- Links to Federal Agencies and National Cultural Heritage Organizations: http://www.fema.gov/r-n-r/hplinks.htm
- Public Assistance and Hazard Mitigation: Environmental Considerations and Contacts, FEMA-1361-DR-WA, Greenbook, Final Version, http://www.fema.gov/reg-x/d1361gbk.doc

Note: these web links were accurate as of May 2002.

Resources may be available from these offices—using best available data when possible or adding to existing plans (also consider checking local websites).

Resource	May Be Available From
• Land Use Plan • Zoning • Growth Management Plan	City/County Planning Office, business/industry, citizens
• Building Codes • Development Regulations • Critical Area Ordinances • Geological Technical Reports/Data	City/County Building Code Offices, City/County Planning Office, Growth Management Office, State Building Code, State Department of Labor and Industries
Historic And Archeological Preservation Plans/Inventory	County/City Historic and Archeological Preservation Office, local society, State Office of Archeology and Historic Preservation, Tribal Historic Office, Museum
Wastewater Management Plan	City/County Planning Office, Municipal and Industrial Wastewater Collection and Treatment Facilities, Building Department (septic tanks)
Water Supply Planning	City/County Public Works, Department of Ecology
Capital Facilities Plan	City/County Planning Office, State General Administration/Office of Financial Management (capital budget)
Hazard Disclosure	Real Estate Transactions and Title Companies
• Shorelines Management Plan • Watershed Management Plan • Comprehensive Flood Management Plan • Community Rating System Plan • Stormwater Management Plan • Groundwater Management Plan	City/County floodplain or shorelines manager, Community Rating System manager, Tribal Community Resource Agency
Terrorism Inventory and/or Year 2000 Critical Facilities and Infrastructure Inventory	City/County Planning or Emergency Management Office, State Agencies NOTE: subject to Public Disclosure Act exclusions
• Wetlands Management Plan • Transportation Plans	City/County Planning Office or Transportation

Flood Mitigation Assistance Plan	Emergency Management Office or City/County floodplain manager
Flood Insurance Rate Maps (FIRMS)	City/County floodplain manager, insurance agencies, FEMA
Landslide Management	City/County Public Works
Insurance Claims	Local National Flood Insurance Program (NFIP), local insurers, Department of Ecology, homeowners/structure owners
Repetitive Loss Structures List (flood)	City/County GIS, Planning (Note: while sharing is encouraged, there is a need to be aware of the Privacy Act)
Disaster Declarations or other Emergencies for Jurisdiction	County/City Emergency Management Office, individual response offices, such as the transportation or public works departments; library—research newspapers, county or city clerk (for official meeting records)
GIS	County/City Planning or Community Development offices; Departments of Ecology, Natural Resources, Transportation, other
Topographical Maps	United States Geological Service
Tax Maps	County Tax Assessor
Slosh Maps (for coastal areas)	US Army Corps of Engineers
Natural Hazards Element of a Local Comprehensive or General Plan-- Growing Smart	American Planning Association
Cultural and natural resources	Community Development and Parks Departments
Health	Department of Health, local, state and tribal
Population Trends	Office of Financial Management (OFM-state) and the U.S. Bureau of the Census Internet site: http://www.census.gov/population/www/estimates/countypop.html
Federal Programs Offering Non-Structural Flood Recovery and Floodplain Management Alternatives	Office of Management and Budget (OMB-federal OMB's web site http.//www.whitehouse.gov/wh/new/html/flood.pdf or Article by fax (202.395.4817)

APPENDIX B: GLOSSARY

A Major Disaster—is defined as any natural catastrophe, or, regardless of cause, any fire, flood, or explosion that causes damage of sufficient severity and magnitude to warrant assistance to supplement state, local, and disaster relief organization efforts to alleviate damage, loss, hardship, or suffering.

An Emergency—is defined as any occasion or instance for which federal assistance is needed to supplement state and local efforts to save lives and protect property and public heath and safety, or to lessen or avert the threat of a catastrophe.

Best Available Data—for purposes of the November 1, 2003 requirement of approved plans, the intent is to use existing plans, reports and other already created data to develop a local hazard mitigation plan.

Best Available Science—this references scientific sources, when available, from which the proposed standards are derived. The standards are intended to be consistent with the "best available science" as is generally applicable throughout the state. However, the science related to critical areas is constantly being researched and updated, and varies for each ecosystem. Each jurisdiction is required to include the best available science in its adoption of critical area regulations. In doing so, each jurisdiction should consider any newer studies and recommendations that might be available, and any science that is specific for its geographic location. The science that constitutes the "best available science" is defined in WAC 365-195-900 through 365-195-925. The components of a valid scientific process, the use of non-scientific information, and what to do to protect critical areas if science is not available are discussed in a document produced by the Growth Management Division called *Model Code Recommendations for Designating and Protecting Critical Areas, 1st Edition, 2nd Draft, May 2002*. When statewide scientific standards are not available, this Model uses science that may be applicable in most jurisdictions (but not all) or generally accepted standards.

Community Rating System (CRS)—administered by FEMA, the Community Rating System provides flood insurance discounts for residents in National Flood Insurance Program (NFIP) communities that undertake floodplain mitigation activities above the minimum NFIP standards.

Community Partners—these include, but are not limited to: Industry and business (large and small), chamber of commerce, real estate developers, homeowner associations, construction industry, transportation systems, utilities, volunteer and faith based organizations, health care, education, workforce unions and professional groups, government agencies and associations and the general public.

Critical Facilities—those facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include hospital and medical care, including critical care facilities; waste water treatment plant; potable water systems; Emergency Operations Centers; police and fire stations; and emergency shelters—or as defined by the jurisdiction.

Critical Infrastructure—those systems whose incapacity or destruction would have a debilitating impact on the defense or economic security of the nation, to include: telecommunications, electrical power systems, gas and oil, banking and finance, transportation, and government services.

Federal Emergency Management Agency (FEMA)—an independent agency of the federal government, reporting to the president. FEMA's mission is to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk based, emergency management program of mitigation, preparedness, response, and recovery.

Flood Insurance Rate Map (FIRM)—the official map of a community prepared by FEMA, showing base flood elevations along with the special hazard areas and the risk premium zones. An un-numbered map can be developed with FEMA for groundwater flooding.

Growth Management Act (GMA)—requires that local jurisdictions designate and protect critical areas (as described in RCW 36.70A.050, 36.70A.172 (1), and Chapter 365-190 and 365-195 WAC), and defines critical areas as:

- Wetlands
- Areas with a critical recharging effect on aquifers used for potable water (critical aquifer recharge areas)
- Frequently flooded areas
- Geologically hazardous areas
- Fish and wildlife habitat conservation areas

GMA also requires jurisdictions to include the best available science and to take measures for the preservation and protection of anadromous fish. Anadromous fish are those that spawn and rear in freshwater and mature in the marine environment, including salmon and char (bull trout).

The *Model Code Recommendations for Designating and Protecting Critical Areas* was designed to be used as a tool to help jurisdictions throughout the state create and update critical areas ordinances. It is not tailored to the specific environmental characteristics of every (or any) jurisdiction in the state. In fact, prior to adopting this Model, each jurisdiction should review the best available science specific to its local environmental conditions and other locally relevant information. The best available science for your jurisdiction may dictate different performance standards for a specific situation than those provided in this Model. As a tool, the Model attempts to provide a comprehensive set of code sections that would generally be applicable in any jurisdiction. Of course, if a jurisdiction does not include a specific type of critical area,
then those relevant sections need not be considered. Additionally, many of the sections included here are reflective of state laws and rules, and may be duplicative of existing codes adopted locally (for example, many of the definitions included in the Model may already be adopted in the local code). In either case, jurisdictions may choose to simply reference such other laws, rules, or codes, rather than restate them in the critical areas regulations.
http://www.ocd.wa.gov/info/lgd/growth/bas/model_cao_pic_051002.pdf

Hazard Mitigation Grant Program (HMGP)—Authorized under section 404 of the Stafford Act, the HMGP provides funding for cost-effective hazard mitigation projects in conformance with the state's Hazard Mitigation Strategy required under Section 322 of the Stafford Act. The project must comply with the National Environmental Policy Act, must solve a problem independently, should address a repetitive problem or one that poses a significant risk to public health and safety, must be the most practical solution after considering a range of alternatives, and considers the long-term changes to the area it protects and has manageable future maintenance and modification requirements.

Mitigation—Any action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of hazards and are cost beneficial. Some examples include:

- elevating houses above base flood levels
- acquiring or relocating high hazard area homes
- elevation or relocation of utilities
- catch basins and water retention projects
- floodproofing of infrastructure
- earthquake retrofit of water reservoir

- erosion and sediment control projects
- zoning land in floodplains for park land or low density use
- positive connections between walls and roof'

National Flood Insurance Program (NFIP)—Administered by the Federal Insurance Administration, the NFIP makes federally subsidized flood insurance available to property owners in communities that participate in the program. Participating communities must adopt and enforce floodplain management ordinances that meet the criteria established by FEMA. To check if your community is scheduled to be remapped, go to http://www.fema.gov/mit/tsd/st_main.htm.

Section 322 Hazard Mitigation Plan—Requires the identification and evaluation of mitigation strategies or initiatives. Section 322 is the reference in the Stafford Act, as amended in 2000. Section 201.4 State Mitigation Plan and Section 201.6 Local Mitigation Plan or Strategy are from 44CFR, as of 2002. Requires the identification and evaluation of mitigation opportunities, and that all repairs be made in accordance with applicable codes and standards as a condition of receiving federal disaster assistance. It was enacted to encourage communities to identify and mitigate natural hazards.

Planning Area—This may be a state agency, nonprofit agency or special purpose district and the buildings, infrastructure, and land which they control; a county-wide, city-wide, or hazard specific regional area—as long as the hazard and risk for each building and infrastructure is clearly identified. For instance, a house that has experienced one inch of water damage in a 100-year flood may be different Base Flood Elevation (BFE) than a house on a neighboring street that experienced five feet of water damage. A watershed plan may be

The Ocean Resources Management Act–-(RCW 43.143.005 – 43.143.902)
Enacted in 1989 and amended in 1997, this chapter of the RCW articulates policies and establishes guidelines for the exercise of state and local management authority over Washington's coastal waters, seabed, and shorelines. This statute addresses the coastal and ocean natural resources within three miles of the state's coastline, defined here as from mean high tide seaward three miles along the Washington coast from Cape Flattery south to Cape Disappointment. The statute enumerates eight criteria to be met or exceeded in the decision-making processes by which the state of Washington and local governments must develop plans for the management, conservation, use, or development of natural resources in Washington's coastal waters (RCW 43.143.030).

The Seashore Conservation Act–-(RCW 43.51.650-685)
Enacted in 1967 and substantially amended in 1969, the Seashore Conservation Act (SCA) declares the necessity of dedicating the uses of the Pacific Ocean Beaches of Washington "…to public recreation and to provide certain recreational and sanitary facilities." The SCA also established "for the recreational use and enjoyment of the public" the Washington State Seashore Conservation Area and placed its administration under the jurisdiction of Washington State Parks and Recreation Commission. The SCA applies to "the beaches bounding the Pacific Ocean from the Straits of Juan de Fuca to Cape Disappointment at the mouth of the Columbia River.

The Shoreline Management Act of 1971— (RCW 90.58) (WAC 173-145)
The citizens of Washington State passed the Shoreline Management Act (SMA) in 1971 in recognition of the state's shorelines as "among the most valuable and fragile of its natural resources" and the great concern throughout the state relating to their utilization, protection, restoration, and preservation. The SMA includes all shorelines (streams greater than 20 cfs and associated wetlands and lakes larger than 20 acres) and shorelands (lands extending 200 feet from the Ordinary High Water Mark of the shoreline). The goals of the SMA are to:
1. Plan for and foster all reasonable and appropriate uses of the shorelines;

2. Ensure development of shorelines in a manner which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest;
3. Protect against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life.
The SMA calls for cooperative program between local governments and the Department of Ecology. It provides local governments with special guidelines for creating their policies and regulations for shorelines of statewide significance. Regulation must minimize human-made intrusions on the shoreline. Ecology protects and manages the water of the state through implementation of the SMA.

Vulnerability—The extent to which people will experience harm and property will be damaged from a hazard.

Table 1 identifies the requirements of three FEMA planning programs, showing the similarities.

Table 1		**Hazard Mitigation Planning Process Local Planning Requirements By Program**		
FEMA How-to-Series		**Hazard Mitigation Grant Program (Section 201.6)**	**Flood Mitigation Assistance Program**	**Community Rating System Floodplain Management Planning (10-Step Process)**
Planning Requirements	Phase 1 Organize Resources	Coordination among agencies.	Coordination with other agencies or organizations.	Coordinate with other agencies.
		Integration with other planning efforts.	Involve the public, including a description of the planning process. Public involvement may include workshops, public meeting, or public hearings.	Involve the public.
		State coordination of local mitigation planning.		Organize to prepare the plan.
	Phase 2 Assess Risks	Identify hazards.	Flood hazard area inventory including an identification of the flood risk, including estimates of the number and type of structures at risk and repetitive loss properties	Assess the hazard.
		Profile hazard events.		
		Assess vulnerability.	Problem identification including a description of the existing flood hazard the extent of flood depth and damage potential and the applicant's floodplain management goals.	Assess the problem
		Estimate potential losses.		
	Phase 3 Develop the Plan	Documentation of planning process.	Review of possible mitigation actions, including the identification and evaluation of cost-effective and technically feasible mitigation actions.	Set goals.
		Capability assessment.		Review possible activities.
		Local hazard mitigation goals.		Draft an action plan.
		Identification and analysis or mitigation measures.		
		Funding sources.		
	Phase 4. Implement, Monitor and Update	Adoption.	Documentation of the formal plan adoption by the legal entity submitting the plan (e.g., Governor, mayor, county executive).	Adopt the plan.
		Implementation of mitigation measures.		Implement, evaluate and revise the plan.
		Monitoring, evaluation, and updating the plan.		
		Implementation through existing programs.		
		Continued public involvement.		

Worksheet Establish the Planning Team

Date:

Task A. Create the Planning Team (add as necessary)

Local

Administrator/Manager
Planning and Zoning
Economic Development
Attorney
Emergency Management
Solid Waste
Public Works
Medical
Utilities
Budget and Finance
Building
Tourism Office
Fire Chief
Chief of Police
Transportation
School Board

State

Hazard Mitigation Officer
Growth Management Office
National Flood Insurance
Public Information Office
Emergency Management
Insurance Commission
Natural Resources\Ecology
Fish and Wildlife
Environmental Protection
Utilities and Transportation
Economic Development
Housing/Building Code
Tourism
State Fire Marshall
State Police
Transportation
Academia

Non-Governmental Organizations

Chamber of Commerce
Utility Companies
Neighborhood Organizations
Homeowners Associations
Red Cross and Faith Based Organizations
Environmental Organizations
Private Development Agencies/Business and Industry

Special Districts

Regional Planning Organizations
Flood Control District
School District
Fire District

Affected Citizens

Mitigation Workbook for Local Governments
Draft Revised June 2002

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"By taking actions in our homes, businesses, and our communities to mitigate risks, we can reduce disaster impacts and break the cycle of losses that we have witnessed in recent years."

Michael J. Armstrong
FEMA, Associate Director for Mitigation

APPENDIX D

WORKSHEET #1: HAZARD IDENTIFICATION AND ANALYSIS

Check with your local Emergency Management Office for their *Hazard Identification and Vulnerability Analysis*				
Hazard	**Likelihood of Occurrence**	**Location** (i.e., small, medium, large)— **correspond to map**	**Impacts** (i.e., low, medium, high)	**Hazard Index** (i.e., rank by combining how much impact and how frequently this hazard affects your community)
Avalanche				
Earthquake				
Flooding				
Ground Water Flooding				
Hazardous Materials				
Lahar				
Landslide				
Tornado				
Wildfire				
Wind Storms				
Winter Storms				
Other				

WORKSHEET #2: AREA VULNERABILITY ASSESSMENT

Hazard Area Location _____
(copy this form and complete for each hazard in your community)

	Developed Land			Undeveloped Land		
	Number of People (Table 1, column 2)	**Number of Buildings** (from tax records)	**Approximate Value** (from tax records)	**Number of People** (Table 1, column 5 if developed under existing policies)	**Number of Buildings** (if developed under existing conditions)	**Approximate Value** (average current value times the number of buildings from the previous column)
Residential (use max. figures)						
Commercial						
Industrial						
Public Buildings and Critical Facilities						
Sewage Treatment Plant						
Water Treatment Plant						
Hospitals						
Schools						
Roads						
Police						
Fire						
Hazardous Facilities						
TOTAL						

WORKSHEET #2a: TOTAL VULNERABILITY SUMMARY

Developed Land					Undeveloped Land		
Hazard Area Location	**Total People**	**Total Buildings** (by type – example residential = commercial = industrial =)	**Approximate Value** (in dollars)	**Number of Critical Facilities** (example—water treatment plant)	**Projected Number of People**	**Projected Number of Buildings**	**Projected Value**
TOTAL							

Note: Type of Occupancy of Building could be further defined as Agricultural, Religious, Nonprofit, Government, Education, and Utilities.

WORKSHEET #3: COMMUNITY CAPABILITY ASSESSMENT

Policies and Programs (ex. zoning ordinance, Growth Management Act)	**Document Reference** (ex. comprehensive plan & page number)	**Effectiveness for Mitigation** (ex. low, medium, high)	**Rationale for Effectiveness** (ex. low because allows development in the floodplain)

WORKSHEET #4: COMMUNITY GOALS

Source	Existing Goal Statement	Effective Goal for Mitigation? (If not, how to modify goal)
Capital Improvement Plan		
Community Rating System Plan		
Comprehensive Emergency Management Plans		
Comprehensive Flood Control Management Plan		
Comprehensive Land Use or Growth Management Plan		
Critical Area Ordinances/Development Regulations		
Dam Safety Plans		
Economic Development Plan		
Flood Mitigation Assistance Plan		
Hazard Identification and Vulnerability Analysis		
Parks and Open Space		
Stormwater Management Plan		
Transportation Plan		
Other		

WORKSHEET #5: MITIGATION STRATEGY

Hazard Area Location	Type of Hazard(s)	New Initiative or Recommended Policy Changes	Goals Addressed	Responsible Party/Phone or Email	Date Due

WORKSHEET #5a: SUMMARIZED STEPS FOR MITIGATION STRATEGY

New Initiative or Recommended Policy Changes	**Hazard Areas Affected** (List all areas affected by policy changes)	**Responsible Party**	**Date Due**	**Hazard Type(s)**